

HEAT AND HUMIDITY GUIDELINES

The fundamentals of a Heat Acclimatization Program are as follows:

- 1) A Certified Athletic Trainer or 1st Responder **MUST** be in attendance at all football practices and games.
- 2) Physical exertion and training activities should begin slowly and continue progressively. An athlete cannot be conditioned in a period of only two to three weeks.
 - a. Begin with shorter, less intense practices and training activities, with longer recovery intervals between bouts of activity.
 - b. Minimize protective gear (helmets only, no shoulder pads) during first several practices, and introduce additional uniform and protective gear progressively over successive days.
 - c. Emphasize instruction over conditioning during the first several practices.
- 3) Keep each athlete's individual level of conditioning and medical status in mind and adjust activity according. These factors directly affect exertional heat illness risk. For example, there is an increased risk if the athlete is obese, unfit, has been recently ill, has a previous history of exertional heat illness, or has Sickle Cell Trait.
- 4) Adjust intensity (lower) and rest breaks (increase frequency/duration), and consider reducing uniform and protective equipment, while being sure to monitor all players more closely as conditions are increasingly warm/humid, especially if there is a change in weather from the previous few days.
- 5) Athletes must begin practices and training activities adequately hydrated.
- 6) Recognize early signs of distress and developing exertional heat illness, and promptly adjust activity and treat appropriately. First aid should not be delayed.
- 7) Recognize more serious signs of exertional heat illness (clumsiness, stumbling, collapse, obvious behavioral changes and/or other central nervous system problems), immediately stop activity and promptly seek medical attention by activating the Emergency Medical System. On-site rapid cooling should begin immediately.
- 8) An Emergency Action Plan (EAP) with clearly defined written and practiced protocols should be developed and in place ahead of time.
- 9) Prior to season all coaches, athletic training personnel and first responders working with team should review signs and symptoms of heat illness and the emergency action plan for their school.

Precautions must be taken to prevent heat-related problems. Please pay particular attention to the following:

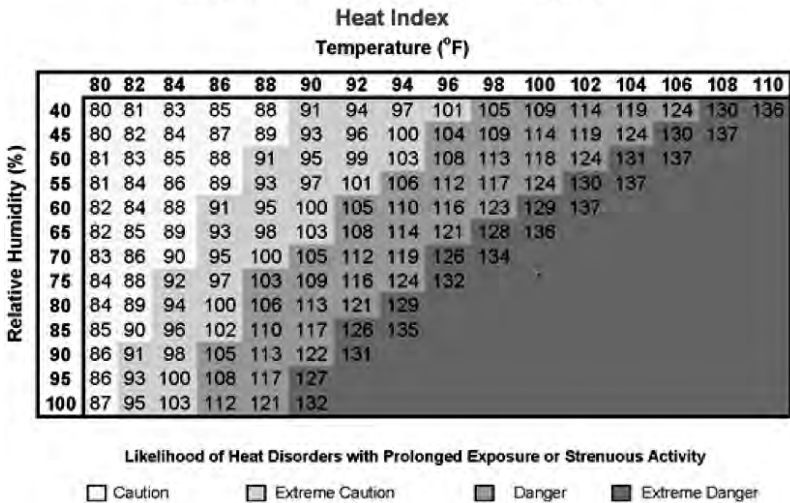
- A Heat Index chart should be available at practices and contests
- A copy of the Emergency Action Plan that outlines steps to take in case of severe environmental conditions, should be on-site.
- Supplies for rapid cooling should be on-site. These should include a simple "toddler swimming pool" or tank for rapid immersion.

Hot Weather Management, Prevention Guidelines and Recommendations

1. Measure WBGT reading if this can be done accurately onsite. If not, determine this from weather station or reliable airport site within 5 to 10 miles of practice site. If WBGT is not available, determine temperature in F/C and Relative Humidity and refer to the Heat Index Chart on the following page.
2. As temperatures increase, minimize clothing and equipment.
3. Provide unlimited drinking opportunities during hotter practices. NEVER withhold water from athletes.
4. If and when possible, pre and post-practice weigh-ins should be conducted. (NOTE: an athlete who is not within 3% of the previous pre-practice weight should be withheld from practice. These athletes should be counseled on the importance of re-hydrating.)

Heat Index and Physical Exercise Chart		
WGBT Index (F)	Color Code	Athletic Activity Guideline
Less than 80	White	Unlimited activity with primary cautions for new or unconditioned athletes or extreme exertion; schedule mandatory rest / water breaks (5 min water / rest break every 30 min)
80-84.9	Green	Normal practice for athletes; closely monitor new or unconditioned athletes and all athletes during extreme exertion. Schedule mandatory rest / water breaks. (5 min water / rest break every 25 min)
85-87.9	Yellow (Amber)	New or unconditioned athletes should not practice. Well-conditioned athletes should have more frequent rest breaks and hydration as well as cautious monitoring for symptoms of heat illness. Schedule frequent mandatory rest / water breaks. (5 min water / rest break every 20 min) Have immersion pool on site for practice.
88-89.9	Red	All athletes must be under constant observation and supervision. Remove pads and equipment. Schedule frequent mandatory rest / water breaks. (5 min water / rest break every 15 min) Have immersion pool on site for practice.
90 or above	Black	SUSPEND PRACTICE

NOAA's National Weather Service



- Very Light Gray Zone: CAUTION:** Normal practice for athletes, closely monitor new or unconditioned athletes or all athletes during extreme exertion. Schedule mandatory rest / water breaks. (5 min water / rest break every 25 min)
- Light Gray Zone: EXTREME CAUTION:** New or unconditioned athletes should not practice. Well-conditioned athletes should have more frequent rest breaks and hydration as well as cautious monitoring for symptoms of heat illness. Schedule frequent mandatory rest / water breaks. (5 min water / rest break every 20 min) Have immersion pool on site for practice.
- Medium Gray Zone: DANGER:** All athletes must be under constant observation and supervision. Remove pads and equipment. Schedule frequent mandatory rest / water breaks. (5 min water / rest break every 15 min) Have immersion pool on site for practice.
- Dark Gray Zone: EXTREME DANGER:** SUSPEND PRACTICE

Please refer to the NCHSAA website—Health and Safety—for more detailed heat management guidelines and information about the management of heat strokes and heat exhaustion.

Management of suspected or possible Heat Stroke

Activate emergency medical system immediately; if appropriate medical staff is on-site, cool first and transport second whenever possible.

Remove all equipment and excess clothing.

Immerse the athlete in a tub of cold water (the colder the better); water temperature should be between 35 to 60°F (2 to 15°C); ice water is ideal but even tepid water is helpful; maintain an appropriately cool water temperature; stir the water vigorously during cooling.

Monitor vital signs (rectal temperature, heart rate, respiratory rate, blood pressure) and mental status continually. Maintain patient safety.

Cease cooling when rectal temperature reaches 101 to 102°F (38.3 to 38.9°C).

NOTE: Since rectal temperature measurement is essential for diagnosis and management of a heat stroke, when possible a Rectal Thermometer should be accessible on-site.

Alternative cooling

- When immersion is not available follow all other steps above and do the following:
- Place icepacks at head, neck, axillae and groin
- Bathe face and trunk with iced or tepid water
- Fan athlete to help the cooling process
- Move to shaded or air conditioned area if available near the practice site.

HEAT EXHAUSTION

The clinical criteria for heat exhaustion generally include the following:

- Athlete has obvious difficulty continuing with exercise
- Body temperature is usually 101 to 104°F (38.3 to 40.0°C) at the time of collapse
- No significant dysfunction of the central nervous system is present (e.g., seizure, altered consciousness, persistent delirium)

If any central nervous system dysfunction develops, such as mild confusion, it resolves quickly with rest and cooling.

Patients with heat exhaustion may also manifest:

- Tachycardia and hypotension
- Extreme weakness
- Dehydration and electrolyte losses
- Ataxia and coordination problems, syncope, light-headedness

- Profuse sweating, pallor, “prickly heat” sensations
- Headache
- Abdominal cramps, nausea, vomiting, diarrhea
- Persistent muscle cramps

SIGNS AND SYMPTOMS OF HEAT STROKE

The two main criteria for diagnosing exertional heat stroke:

Rectal temperature above 104°F (40°C), measured immediately following collapse during strenuous activity

CNS dysfunction: possible symptoms and signs: disorientation, headache, irrational behavior, irritability, emotional instability, confusion, altered consciousness, coma, or seizure.

CLINICAL FINDINGS:

Most patients are tachycardic and hypotensive.

Hyperventilation, dizziness, nausea, vomiting, diarrhea, weakness, profuse sweating
Dehydration, dry mouth, thirst, muscle cramps, loss of muscle function, and ataxia.

Absence of sweating with heat stroke is not typical and usually indicates additional medical issues.

Ref. O'Connor and Casa Up-to-date 2012



NCHSAA photo courtesy Bob Norwood